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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/318,682	05/25/1999	ANIL M. MURCHING	6748-US	1767

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EXAMINER

CHAWAN, SHEELA C

ART UNIT PAPER NUMBER

2621

DATE MAILED: 12/19/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/318,682

Applicant(s)

Anil M. Murching

Examiner

Sheela Chawan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 20) ☐ Other:

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DETAILED ACTION

Drawings

1. The drawings are objected to because of draftsman's remarks (see attached PTO-948).
Correction is required.

See MPEP 608.02(d) . Any structural details that is essential for a proper understanding of the disclosed invention should be shown in the drawing . MPEP 608.02(d). Correction is required

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was

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made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

3. Claim 1, is rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster et al., (US. 5,933,524), in view of Graham et al., (US. 5,469,374).

As per claim 1, Schuster teaches a method of performing semi-automatic tracking of colored objects (column 6, lines 28 - 29) within a video image sequence comprising the steps of (abstract) :

separating objects within an initial frame (note, segmentation of digital color images on the basis of color histogram which describe the characteristic color properties of the at least one imaged object for determining whether a pixel of a color image which is to be decompose into object segments belongs to a specific object segment or not , column 1, lines 45 - 62) of the video image sequence on the basis of color (column 1, lines 49 - 59, column 2, lines 1 - 10) ;

identifying from the separated objects an object of interest having a centroid (note column 1, lines 49-59, column 3, lines 39-62, column 4, lines 38-65, and column 5, lines 26-56, note, that the centroid b , weighted average μ_i and Σ_i are the color moments) ; and

Although, Schuster discloses method for segmentation of digital color images ,but fails to specifically mention about using Kalman filters are used in the process of filtering and estimation of the segments of theory in the image processing . However, Graham discloses automatic data segmentation module for target motion analysis application . The system comprises of :

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tracking (column 1, lines 15-21) the object of interest through successive frames (column 1, lines 16-17) of the video image (note, data sequence is considered to be video image) sequence using a Kalman predictive algorithm applied to the centroid (column 2, lines 35-62) , as shown by Graham the use of Kalman filters which are used in the process of filtering and estimation theory in the image processing because, it reduce the computational burden and improve performance of the system (column 1, lines 65-67) .

Graham and Schuster are combined because they both teach a method and apparatus for processing automatic data segmentation module for target motion analysis application .

At the time of invention, it would have been obvious to one having ordinary skill in the art to use Graham for processing segment image using Kalman filters which are used in the process of filtering and estimation theory in the image processing field information in Schuster's apparatus

The motivation for combining would have been obvious because it reduce the computational burden and improve performance of the system . As suggested by Graham at (column 1, lines 65-67) .

4. Claims 2 and 3, are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster et al., (US. 5,933,524), in view of Graham et al., (US. 5,469,374), as applied to the above claim 1, and further in view of Rangan et al., (US.6,198,833) .

Regarding claim 2, Schuster discloses method for segmentation of digital color images, but fails to specifically mention about velocity in determining the position of the frame . However,

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Rangan discloses a method for tracking a moving entity in a video presentation . The system comprises the step of :

from the initial frame determining a position and velocity for the centroid (abstract, column 3, lines 36 - 38) ;

for each successive frame predicting a position of the centroid (note, correcting the position of the object on the frame, column 3, lines 36 - 38, column 4, lines 1-10);

from the predicted position extracting a connected group of blocks that belong to the object of interest (column 2, lines 38- 54);

measuring the position of the centroid in the successive frame from the connected group of blocks (note, measuring the position of moving entity in video by generating a matrix of signature pixels relative to the tracking object and the color values of each of the signature pixels in the first frame thereby creating a color signature for the object, testing the color signature at the plurality of test position in the immediate vicinity of the assumed position against the color signature recorded for the entity , accepting the position with the closest match to the color signature for the entity in which the process is repeated to determine positions for the entity in succeeding frames in the video data , column 2, lines 54-67) ; and

smoothing (column 11, lines 21-30) the measured position and velocity of the centroid (column 9, lines 30-66, column 10, lines 1 -3), as shown by Rangan the use of velocity in tracking a moving image by the use of vector . The process is thus contained from frame to frame , using

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the vector as a tool to because this provides an assumed next position and then testing that position for accuracy (column 10, lines 1 - 3) .

Rangan and Schuster are combined because they both teach a method and apparatus for tracking a moving entity in a video presentation .

At the time of invention, it would have been obvious to one having ordinary skill in the art to use Rangan for processing velocity in tracking a moving image by the use of vector information in Schuster's apparatus .

The motivation for combining would have been obvious because the process is thus contained from frame to frame , using the vector as a tool to provide an assumed next position and then testing that position for accuracy . As suggested by Graham at (column 10, lines 1 - 3) .

As per claim 3, Rangan teaches the method as recited in claim 1 further comprising the steps of:

detecting whether the centroid in the successive frame is within the object of interest and field of view (column 9, lines 30-67) ; and

applying an error recovery scheme to re-identify the object of interest in the successive frame (column 10, lines 4-13).

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Other prior art cited

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Qian (US.6,148,092) discloses sydtem for detecting skin-tone regions within an image .

Gauch (US. 6,246,803) discloses real-time frature -based video stream validation and distortion analysis system using color moments.

Mitsuyama et al., (US. 5, 768,412) discloses region segmentation method for particle images and apparatus thereof .

Matsugu et al., (US. 6,167,167) discloses image extractions apparatus and method.

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Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheela Chawan whose telephone number is (703) 305-4876.

If attempts to reach the examiner on Monday through Thursday from 8:30 a.m. to 5:00 p.m. by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau, can be reached at (703) 305-4706.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

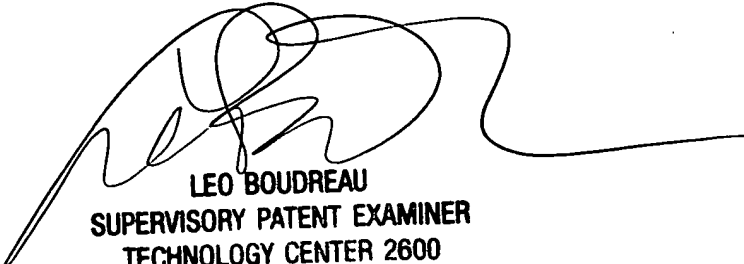
or faxed to:

(703) 872 - 9314, (for formal communications intended for entry)

Or: Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 305-3900.

See

Sheela Chawan
Patent Examiner
Group Art Unit 2621
December 11, 2001


LEO BOUDREAU
SUPERVISORY PATENT EXAMINER
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